

IN THE CLAIMS

Please amend the claims as indicated below.

1. (previously presented) A metal oxide material, comprising:
a metal oxide substrate; and
a coating comprising an organosilane polymer and having an improved durability, the organosilane polymer bonded to a portion of the substrate through at least 3 attachment points.
2. (original) The metal oxide of claim 1, the organosilane comprising a polycarbosilane compound.
3. (original) The metal oxide of claim 2, wherein the polycarbosilane compound is derived from a monomer containing a leaving group selected from halogens, triflates, alkoxy, acyl, oximes, amines, amine salts, or combinations or mixtures thereof.
4. (original) The metal oxide of claim 3, wherein the monomer is alkyl substituted or aromatic substituted.
5. (original) The metal oxide of claim 1, wherein the coating is very stable against hydrolytic cleavage conditions.
6. (original) The metal oxide of claim 1, wherein the metal oxide is silica, titania, zirconia, or a combination thereof.
7. (original) The metal oxide of claim 1, wherein the metal oxide is silica.
8. (original) The metal oxide of claim 7, wherein the silica is used as a packing material or a support material in chromatography.
9. (previously presented) A support composition, comprising:
a metal oxide substrate; and
a coating comprising an organosilane polymer and having an improved durability, the organosilane polymer bonded to a portion of the substrate through at least 3 attachment points.
10. (previously presented) A chromatographic support composition, comprising:
a silica substrate; and
a polycarbosilane derived from an alkyl or aromatic substituted monomer containing a leaving group selected from halogens, triflates, alkoxy, acyl, oximes, amines, amine salts, or

combinations or mixtures thereof, the polycarbosilane bonded to the silica substrate through at least three attachment points.

11. (previously presented) A support composition made by the method comprising:
providing a metal oxide substrate; and

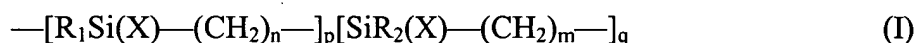
bonding a coating to a portion of the substrate through at least three attachment points, the coating comprising an organosilane polymer derived from an alkyl or aromatic substituted monomer containing a leaving group selected from halogens, triflates, alkoxy, acyl, oximes, amines, amine salts, or combinations or mixtures thereof.

12. (canceled)

13. (canceled)

14. (previously presented) A chromatographic support composition, comprising:
a silica substrate; and

a polydentate silane of the formula (I) bonded to a portion of the silica substrate



wherein R_1 is an alkyl or aryl group having from 1 to 30 carbon atoms, R_2 is an alkyl or aryl group having from 1 to 30 carbon atoms and may be the same or different than R_1 , R_1 or R_2 include a functional group similar to $\text{---}(\text{CH}_2)_3\text{---N}^+\text{Cl}^-$, $\text{---}(\text{CH}_2)_2\text{---C}_6\text{H}_4\text{---}(\text{CH}_2)_3\text{---C}_6\text{H}_4\text{---SO}_3\text{H}$, $\text{---}(\text{CH}_2)_3\text{---O---CH}_2\text{---CHOH---CH}_2\text{OH}$, $\text{---}(\text{CH}_2)_3\text{---NH}_2$, and $\text{---}(\text{CH}_2)_3\text{---CN}$, n is an integer from 1 to 10, m is an integer from 1 to 10, p and q are integers from 0 to 100 (except where $p+q=2$ or 0), and X is a leaving group.

15. (original) The support composition of claim 14, wherein the leaving group of the polydentate silane is selected from halogens, triflates, alkoxy, acyl, oximes, amines, amine salts, or combinations or mixtures thereof.

16. (previously presented) A method of making a metal oxide material, comprising:
providing a metal oxide substrate; and

bonding a coating to a portion of the metal oxide substrate through at least three attachment points, the coating comprising an organosilane polymer and having an improved durability.

17. (original) The method of claim 16, the organosilane comprising a polycarbosilane compound derived from an alkyl substituted or aromatic substituted monomer containing a

leaving group selected from halogens, triflates, alkoxy, acyl, oximes, amines, amine salts, or combinations or mixtures thereof.

18. (original) The method of claim 16, wherein the coating is very stable against hydrolytic cleavage conditions.

19. (original) The method of claim 16, wherein the metal oxide is silica, titania, zirconia, or a combination thereof.

20. (original) The method of claim 19, wherein the metal oxide is used as a packing material or a support material in chromatography.

21. (original) The method of claim 17, including providing the coating by bonding the monomer to the substrate and then polymerizing the monomer.

22. (original) The method of claim 17, including providing the coating by polymerizing the monomer and then bonding the polymer to the substrate.

23. (previously presented) A method of making a chromatographic support composition, comprising:

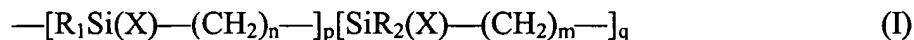
providing a silica substrate; and

bonding a coating to a portion of the silica substrate through at least three attachment points, the coating comprising a polycarbosilane compound derived from an alkyl or aromatic substituted monomer containing a leaving group selected from halogens, triflates, alkoxy, acyl, oximes, amines, amine salts, or combinations or mixtures thereof.

24. (original) The method of claim 23, including providing the coating by bonding the monomer to the substrate and then polymerizing the monomer.

25. (original) The method of claim 23, including providing the coating by polymerizing the monomer and then bonding the polymer to the substrate.

26. (previously presented) A method of making a coating comprising a polydentate silane of the formula (I)



wherein R₁ is an alkyl or aryl group having from 1 to 30 carbon atoms, R₂ is an alkyl or aryl group having from 1 to 30 carbon atoms and may be the same or different than R₁, R₁ or R₂ include a functional group similar to —(CH₂)₃—N⁺Cl[−], —(CH₂)₂—C₆H₄—(CH₂)₃—C₆H₄—SO₃H, —(CH₂)₃—O—CH₂—CHOH—CH₂OH, —(CH₂)₃—NH₂, and —(CH₂)₃—CN, n is an

integer from 1 to 10, m is an integer from 1 to 10, p and q are integers from 0 to 100 (except where $p+q=2$ or 0), and X is a leaving group, the method comprising:

providing a metal oxide substrate;
providing a coating on a portion of the substrate using a monomer containing a leaving group selected from halogens, triflates, alkoxy, acyl, oximes, amines, amine salts, or combinations or mixtures thereof.

27. (original) The method of claim 26, including providing the coating by bonding the monomer to the substrate and then polymerizing the monomer.

28. (original) The method of claim 26, including providing the coating by polymerizing the monomer and then bonding the polymer to the substrate.

29. (canceled)

30. (canceled)

31. (canceled)

32. (canceled)

33. (canceled)

34. (canceled)

35. (canceled)

36. (previously presented) A chromatography system containing a support material comprising:

a metal oxide substrate; and

a coating comprising an organosilane polymer and having an improved durability, the organosilane polymer bonded to a portion of the substrate through at least 3 attachment points.

37. (previously presented) A method of using a chromatographic support material, comprising:

providing a support material including a metal oxide substrate and a coating comprising an organosilane polymer and having an improved durability, the organosilane polymer bonded to a portion of the substrate through at least 3 attachment points; and

using the support material in a chromatography column to analyze the composition of an unknown material.

38. (previously presented) A chromatographic apparatus, comprising a support material including a metal oxide substrate and a coating comprising an organosilane polymer and having an improved durability, the organosilane polymer bonded to a portion of the substrate through at least 3 attachment points.